

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-483/92002(DRSS)

Docket No. 50-483


License No. NPF-30

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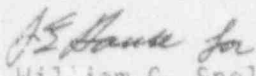
Facility Name: Callaway County Nuclear Station

Inspection At: Callaway Site, Callaway County, Missouri

Inspection Conducted: January 6 through 10, 1992

Inspector:  A. W. Markley

2/3/92
Date

Approved By:  William G. Snell, Chief
Radiological Controls Section

2-3-92
Date

Inspection Summary

Inspection on January 6 through 10, 1992 (Report No. 50-483/92002(DRSS))

Areas Inspected: Routine unannounced inspection of the radwaste and transportation programs including: organization, management controls and training, audits and appraisals, gaseous radwaste, liquid radwaste, solid waste and transportation, effluent reports, primary coolant chemistry and air cleaning systems (IP 84750, 86750).

Results: The licensee's programs for radioactive waste management, effluent monitoring and transportation of radioactive waste and radioactive materials appear to be effective in protecting the public health and safety.

Area where improvement appears to be merited are the effluents program (Sections 5 and 6), housekeeping in the hot machine shop and the tool decontamination area (Section 10), and maintenance of current records of personnel experience and qualifications (Section 3.a).

A number of program strengths were identified. Audits and surveillances were performance based and were generally excellent (Section 4); housekeeping was generally very good (Section 10); staffing and training of personnel was good (Section 3); and shipping and transportation was very good with excellent performance noted with the fuel shipment to Canada and the type B shipment for disposal (Sections 7 and 8).

DETAILS

1. Persons Contacted

- * H. Blinn, Quality Assurance Engineer
- J. Blosser, Manager, Callaway Plant
- * W. Campbell, Manager, Nuclear Engineering
- * J. Cruickshank, Radwaste Supervisor
- * M. Evans, Superintendent, Training
- * J. Gearhart, Superintendent, Quality Assurance
- * C. Graham, Supervisor, Health Physics Technical Services
- * M. Greeno, Countroom Supervisor
- * G. Hamilton, Supervisor, Radwaste
- * J. Polchow, Superintendent, Chemistry/Radwaste
- * J. Peevy, Manager, Operations Support
- * G. Randolph, Vice President, Nuclear Operations
- * R. Roselius, Superintendent Health Physics
- D. Schnell, Senior Vice President - Nuclear
- * M. Taylor, Assistant Manager - Work Control

- B. Bartlett, Senior Resident Inspector
- * D. Calhoun, Resident Inspector
- * K. Marcus, Reactor Engineer

The inspectors also interviewed other licensee personnel during the course of the inspection.

* Denotes those present at the exit meeting on January 10, 1992.

2. General

This inspection was conducted to review aspects of the licensee's radwaste management, effluent monitoring, and transportation programs. The inspection included tours of radiation controlled areas, auxiliary building, spent fuel building, radwaste facilities, observations of licensee activities, review of representative records and discussions with licensee personnel.

3. Organization, Management Controls and Training (IP 84750, 86750)

The inspector reviewed the licensee's organization and management controls for the radioactive waste management, effluent monitoring, and transportation programs, including: organizational structure, staffing, delineation of authority and management techniques used to implement the program and experience concerning self identification and correction of program implementation weaknesses.

a. Organization and Management Controls

The licensee's radioactive waste management organization consists of a superintendent of chemistry/radwaste, a radwaste supervisor, and three operations supervisors. The inspector reviewed the qualifications of licensee management personnel. All individuals

reviewed were found to have the requisite levels of training and experience to meet the requirements of ANS 3.1-1978. During this review, it was noted that the licensee could not readily provide information regarding the experience and qualification of personnel. When the information was gathered, it was not current.

The inspector reviewed the support provided to the radioactive waste management program. Support was evident in the installation of a new radwaste volume reduction system to handle evaporator bottoms. This is discussed in Section 8.

b. Training

Selected training records were reviewed which indicated that radioactive waste management personnel were being trained in accordance with established training program requirements. The training program for radwaste technicians is a 3 year apprenticeship which includes formal general employee training (GET), classroom courses such as orientation, administrative controls, advanced radiation worker training and plant systems. This is followed by training in a radwaste core program and a period of on-the-job training (OJT). Candidates are then given radwaste specialty training. This includes training on evaporators, gaseous waste systems, shipping and packaging, miscellaneous maintenance, crane operations, decontamination equipment, radwaste chemistry and health physics instrumentation. Annual requalification training consists of two sessions of about forty hours each and includes recent operational events at the site or in the industry. The radwaste management staff receive continuing training by attending radwaste technician retraining courses and professional seminars and meetings. The radwaste organization has been static over the last few years. All personnel have completed the required training and only require periodic retraining.

No violations or deviations were identified.

4. Audits, Surveillances and Self Assessments (IP 84750, 86750)

The inspectors reviewed the results of Quality Assurance audits and surveillances conducted by the licensee since the last inspection. Also reviewed was the extent and thoroughness of the audits and surveillances.

a. Audits and Surveillances

The inspector reviewed the results of two chemistry, two environmental and two radwaste program audits. The radiochemistry portion of the chemistry and environmental audits were reviewed with no problems noted. The radwaste audits covered radwaste operations, liquid and gaseous wastes, secondary liquid wastes, packaging of radioactive materials, sewage treatment and radwaste shipping. Improvements were noted in the operating

administrative controls implementation, handling of secondary liquid waste and the packaging and shipping of a reactor coolant motor to a vendor. The radwaste audit identified problems with low level radwaste storage. Some containers were found without identifying numbers and in unauthorized locations. Wide range gas radiation monitor trend records for the third quarter of 1989 were missing from the vault.

The results of seven surveillances were also reviewed. The chemistry surveillances included assessment of actions taken as a result of contamination found in the auxiliary boiler and transport of a simulated post accident sample. Good performance was noted in the performance of the safety evaluation and considerations contained therein. However, chemistry failed to continue taking samples while Iodine-131 was still present in the auxiliary boiler. The surveillance of tool decontamination noted recurrent problems with the use of decontamination request tags and ineffective corrective actions for improper tag use. Problems were also noted with inconsistent marking of dose rates on bags of contaminated tools and equipment. Good performance was noted in the performance of decontamination of tools and equipment at the 1974' level tool decontamination table. Overall the licensee addressed audit and surveillance findings in an effective and timely manner.

A surveillance performed on fuel shipping activities indicated that extensive planning and preparation by radiation protection resulted in a well implemented shipment. Some problems were noted with equipment during this activity. Another surveillance evaluated the Type B shipment and noted good performance with shipping communications and procedure implementation.

b. Event Identification and Corrective Action

The inspector electively reviewed Suggestion Occurrence Solution (SOS) System reports for event identification, analysis and implementation of corrective actions. Also reviewed were records of tracking and closeout of identified concerns. In general, event identification was consistent with regulatory and procedural requirements. The determination of corrective actions and their implementation was usually good.

No violations or deviations were identified.

5. Gaseous Radioactive Wastes (IP 84750)

The inspector reviewed the licensee's gaseous radwaste management program, including: changes in equipment and procedures, gaseous radioactive waste effluents for compliance with regulatory requirements, adequacy of required records, reports, and notifications, process and effluent monitors for compliance with operational requirements and experience concerning identification of programmatic weaknesses.

The inspector reviewed selected records of radioactive gaseous effluent releases and Semiannual Radioactive Effluent Release Reports for 1990 and the first half of 1991. The pathways sampled and analyses performed appeared to comply with Technical Specifications and/or Offsite Dose Calculation Manual requirements. In 1990, the plant total gaseous effluents released consisted of approximately 931.1, $5.24\text{E-}5$, and 36.91 curies of noble gas, radioiodine, and tritium, respectively; the corresponding values for the first half of 1991 were 5.05, $5.77\text{E-}7$, and 18.45 curies, respectively. Gaseous releases remained less than one percent of annual limits. The high levels experienced in 1990 were attributed to fuel integrity problems.

One unmonitored release occurred between October 2 through November 13, 1990 when iodine-131 was found in the auxiliary boiler system during routine sampling and analyses. Upon discovery and confirmation of the contamination of the auxiliary boiler, the licensee initiated an occurrence report and initiated a safety evaluation for continued operation of the auxiliary boiler system as a radioactive system (in accordance with IE Bulletin 80-10). This resulted in a release of $9.0\text{E-}5$ Ci of I-131, with a dose to the closest member of the public of $7.5\text{E-}3$ mrem. The source of the I-131 was suspected to be the secondary liquid waste evaporator, but the mechanism for the I-131 leakage to the auxiliary boiler has not yet been identified.

This release was identified in the July - December 1990 Semiannual Effluent Release Report (SERR). However, the projected dose to the public due to this release, while comparable to the normal station radioiodine release dose during this period, was not added to the total dose to the public due to normal operations. The licensee indicated that this information would be provided in an update to the July - December 1990 SERR. Additional corrective actions included conducting of tests of the auxiliary boiler and reboiler in conjunction with the operation of the evaporators to identify potential leakage from the evaporator into the auxiliary steam system.

Further review of the SERRs indicated that the licensee had included the activities of some short lived radionuclides, such as bromine-82, activities in the total activity for particulates with half lives greater than 8 days. The additional activity reported did not represent a significant contribution. The inspector reviewed the SERR reporting requirements with the licensee. The licensee indicated that only those nuclides that met the reporting criteria (greater than 8-day half lives) would be reported in the SERRs.

No violations or deviations were identified.

6. Liquid Radioactive Waste (IP 84750)

The inspector reviewed the licensee's liquid radioactive waste management program, including: liquid radioactive waste effluents for compliance with regulatory requirements, adequacy of required records,

reports, and notifications, process and effluent monitors for compliance with operational requirements and experience concerning identification and correction of programmatic weaknesses.

The inspector reviewed selected records of radioactive liquid effluent releases and Semiannual Radioactive Effluent Release Reports for 1990 and the first half of 1991. The pathways sampled and analyses performed appeared to comply with Technical Specifications and/or Offsite Dose Calculation Manual requirements. In 1990, the plant total liquid effluent release consisted of approximately $3.87 \text{ E-}2$ curies total activity (excluding tritium, alpha and dissolved noble gases) and 1,019 curies of tritium; the corresponding values for the first half of 1991 were approximately $6.38 \text{ E-}3$ and 584 curies, respectively. Liquid releases remained less than one percent of annual limits. The inspector also selectively reviewed the liquid batch release permit program and associated documentation for past releases; no problems were noted.

On May 30, 1991, an unmonitored release occurred during a release from the discharge monitor tank. During this discharge, the radiation monitor (HB-RE-0018) tripped which secured the release. The monitor was flushed and the release was reinitiated. However, the monitor was left in the purge configuration due to personnel error which removed it from the discharge path. The licensee had taken two samples to identify and confirm release constituents; however, the second sample had not been analyzed for all constituents.

Corrective actions for this event included counseling of involved personnel regarding poor communications, replacement of the sample chamber with an electropolished chamber to minimize the fouling by contaminants, and revision of procedure HTP-ZZ-02006 to improve the guidance provided for performance of liquid releases. The licensee also failed to report this unmonitored release in the January - June 1991 SERR. The licensee discovered this omission in December 1991. Personnel involved in this event did not have a full understanding of reportability requirements applicable to radioactive liquid releases. This event will be reported in an update to the January - June 1991 SERR.

Several other minor problems were noted with respect to monitoring equipment and personnel performance with respect to liquid effluent performance. Performance in this area appears to have weakened since the last inspection.

No violations or deviations were identified.

7. Solid Radioactive Waste (IP 86750)

The inspector reviewed the licensee's solid radioactive waste management program, including: changes to equipment and procedures, processing and control of solid wastes, adequacy of required records, reports and notifications, performance of process control and quality assurance programs and experience in identification and correction of programmatic weaknesses.

The inspector reviewed selected portions of the licensee's solid radwaste processing, storage and shipping records for 1990 and January through June 1991. Licensee records indicated that approximately 534 and 67.1 cubic meters of radioactive waste, respectively, were shipped offsite for further processing or burial. These radioactive wastes included approximately 107.6 cubic meters of spent resins, filter sludges and evaporator bottoms and approximately 493.5 cubic meters of dry compactable waste. Solid waste processing and shipping facilities appeared to be well organized and in good material condition.

The licensee was in the process of installing a new volume reduction system to handle evaporator bottoms. This system utilizes the evaporator discharge which is then heated to drive off the remaining liquid. A wax/paraffin binder is then added to the solid residue. This system is expected to achieve a 4:1 volume reduction and replaces the abandoned (in place) stock cement solidification system. Along with this modification, the licensee has hard piped the sluice line for spent resins, behind the low level waste storage shield wall, to the area where the resins are discharged to a liner for dewatering. This eliminates the concern regarding the previous method for sluicing resin and evaporator bottoms identified in the previous inspection.

The licensee appears to have enough storage space for radioactive waste to last several years. Since Missouri is a member of the Midwest Compact, the licensee's future ability to ship waste for disposal appears to be limited due to delays resulting from Michigan's ejection from the compact and Ohio's assumption of host state responsibilities.

Currently, the licensee has its dry active waste incinerated at Oak Ridge, TN and burnable mixed waste incinerated at the DSSI facility in Nashville, TN. The licensee is considering a storage option for mixed waste at a facility in Texas; however, this option appears to be prohibitively expensive. This involves temporary storage of waste. The licensee would still retain ownership and responsibility for this waste.

The licensee was involved in two shipments that were both first time events for the licensee. One shipment involved the shipment of several fuel rods to a research facility in Canada. This was a complicated shipment since it not only involved safeguards considerations but also involved acquisition of export approvals from the United States and import approvals from the Canadian governments. The second shipment involved a Highway Route Controlled Quantity, Type B shipment. This shipment also involved numerous governmental notifications and extensive planning. While some minor problems were noted, the extensive planning and effort invested in these shipments resulted in excellent performance in this area.

No violations or deviations were identified.

8. Transportation of Radioactive Materials and Radwaste (IP 86750)

The inspector reviewed the licensee's transportation of radioactive materials program, including: adequacy and implementation of written procedures, radioactive materials and radwaste shipments for compliance

with NRC and DOT regulations and the licensee's quality assurance program, adequacy of required records, reports, shipment documents and notifications and experience concerning identification and correction of programmatic weaknesses.

The inspector selectively reviewed radwaste and radioactive material shipment records for January 1991 to date. Shipping records for solidified resins and evaporator bottoms, vendor equipment, dry active waste were reviewed. Shipping documentation, radiological surveys and procedure implementation appeared to satisfy NRC, DOT and burial site requirements, as applicable.

No violations or deviations were identified.

9. Air Cleaning Systems

The inspector reviewed the last two years Control Room ventilation and emergency exhaust ventilation testing result records of air cleaning system filters, including laboratory analyses for methyl iodide removal efficiencies of charcoal adsorber samples, and in-place penetration (bypass leakage) testing of HEPA and charcoal adsorber filters. The tests appeared to have been conducted in accordance with Technical Specification requirements and yielded results which met acceptance criteria for leakage and removal efficiencies.

While some data scatter was identified on trending charts for the one train of emergency exhaust ventilation, this apparent anomaly did not appear to be significant at this time. Charcoal adsorber testing will continue to be monitored for trends and performance during future inspections.

No violations or deviations were identified.

10. Plant Tours (IP 83750)

The inspector performed several tours of radiologically controlled areas. These included walk downs of the auxiliary building, radwaste facilities and spent fuel pool facilities. The inspector observed the following:

Contamination monitoring, portable survey, area radiation monitoring instrumentation in use throughout the plant; instrumentation observed had been recently source checked and had current calibrations, as appropriate.

Posting and labeling for radiation, high radiation, contaminated and radioactive material storage areas; posting and labeling were in accordance with regulatory requirements and approved station procedures. Some problems were noted with contaminated materials crossing boundaries in a liquid holdup tank (RHUT) area.

Housekeeping and material conditions were generally good. Problems were noted in the hot machine shop. This area is extremely cramped and an accumulation of tools, decontamination

materials, and debris were noted in this area. An accumulation of decontaminated tools was also noted at the decontamination area on the 1974' elevation of the auxiliary building. This later area was also noted as a problem during the last inspection.

During the tour of the auxiliary and radwaste buildings several problems were noted. The B RHR pump was found with boric acid crystals upon the pump, in the insulation and in the immediate vicinity of the pump. The licensee commenced an investigation into this problem during the inspection. The insulation had been removed and a pump run had been scheduled. No work orders were outstanding on this pump. A superheated steam leak was also identified on a main steam line flow venturi. This component had been "Furmanited" with the injection rig still in place. The inspector requested that feedback be provided to the resident inspectors regarding the identification of the cause and corrective action for these problems.

No violations or deviations were identified.

11. Exit Interview (IP 30703)

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on January 10, 1992, to discuss the scope and findings of the inspection.

During the exit interview, the inspector discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. Licensee representatives did not identify any such documents or processes as proprietary. The following matters were specifically discussed.

- a. Inspector concerns regarding weaknesses in the effluents programs. (Sections 5 and 6)
- b. Inspector concerns regarding the availability of qualification records. (Section 3.a)
- c. Inspector concerns regarding housekeeping in the hot machine shop and the tool decontamination area on the 1974' elevation. (Section 10)